

What is Claimed is:

5 1. A seal device prepared by the process of shape forming a composite construction into a desired seal device shape, the composite construction comprising a polymer material disposed onto a rigid nonpolymeric substrate prior to the step of shape forming, the seal device comprising a seal body having a casing member formed from the rigid substrate, and a compliant sealing element formed from the polymer material.

15 2. The seal device as recited in claim 1 wherein the polymer material is configured having a high surface area comprising a plurality of ridges and valleys.

20 3. The seal device as recited in claim 1 wherein the sealing element projects outwardly beyond a length of the casing member and includes a sealing lip for providing a seal against a sealing surface.

25 4. The seal device as recited in claim 1 wherein the seal device is formed from two composite constructions that are joined together and that each comprise a rigid substrate and a respective polymer material.

5. The seal device as recited in claim 4 wherein each polymer material forms a separate compliant sealing element.

30 6. The seal device as recited in claim 1 wherein the sealing element comprises a sealing surface having a contact surface configured to resist fluid leakage.

35 7. The seal device as recited in claim 1 wherein the casing member includes a deformed portion adjacent an inside

diameter casing end that imposes a desired urging force onto the compliant sealing element.

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8. The seal device as recited in claim 1 wherein the casing member has an L-shaped cross-sectional configuration.

9. The seal ring as recited in claim 1 wherein the casing member has a U-shaped cross-sectional configuration.

10. A seal device prepared by the process of:  
depositing a polymer material onto a rigid nonpolymeric substrate to form a composite construction; and  
shape forming the composite construction into a desired shape;  
wherein the sealing device comprises a seal body having:

a casing member that is formed from the rigid substrate;  
and  
a sealing element formed from the polymer material and disposed along a surface of the casing member for placement against a dynamic sealing surface.

11. The seal device as recited in claim 10 wherein the casing member is in the form of a metallic ring and defines an outside diameter of the seal device, wherein the sealing element is positioned radially inwardly of the casing member, and wherein the sealing element includes a contact surface that projects outwardly and away from the casing member for placement against the dynamic sealing surface.

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12. The seal device as recited in claim 10 wherein the casing member is in the form of a metallic ring and defines an inside diameter of the seal device, wherein the sealing element is positioned radially outwardly of the casing member, and wherein the sealing element includes a contact surface that

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projects outwardly and away from the casing member for placement against the dynamic sealing surface.

5 13. The seal device as recited in claim 10 wherein the polymer material has a high surface area provided by a plurality of topographical surface features.

10 14. The seal device as recited in claim 10 wherein the casing member is configured to provide a determined degree of resiliency to the sealing element.

15 15. The seal device as recited in claim 10 wherein the seal device is formed from two composite constructions that are joined together and that each comprise a rigid substrate and a respective polymer material.

20 16. The seal device as recited in claim 15 wherein the two composite constructions are joined together between rigid substrates.

25 17. The seal device as recited in claim 15 wherein the two composite constructions are joined together by mechanical interlocking, and wherein the rigid substrates are separated from one another by one of the polymer materials.

30 18. The seal device as recited in claim 15 comprising dual sealing elements formed from respective composite construction polymer materials, wherein each sealing element projects outwardly a distance away from a respective rigid substrate, and includes a sealing surface for making contact with an adjacent dynamic sealing surface when placed into service.

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19. The seal device as recited in claim 18 wherein the  
sealing elements each project outwardly away from a respective  
5 rigid substrate in the same general direction.

20. The seal device as recited in claim 10 wherein the  
casing member includes a deformed portion adjacent an inside  
diameter casing end that imposes a desired urging force onto the  
10 sealing element.

21. A method for making a seal device from a preformed  
polymer laminated metallic construction, the method comprising  
the steps of:

15 placing a polymer material layer onto a metallic substrate  
and chemically bonding the polymer material layer thereto to form  
a polymer laminated metallic construction;

shape forming the polymer laminated metallic construction  
into a desired shape; and

20 trimming the shaped formed construction into a desired seal  
device configuration;

wherein the sealing device comprises:

a casing member that is formed from the metallic substrate;  
and

25 a sealing element that is formed from the polymer material,  
and that includes a contact surface that projects outwardly and  
away from the casing member for sealing placement against an  
adjacent dynamic sealing surface when placed into service.

30 22. The method as recited in claim 21 wherein the polymer  
laminated metallic construction is in sheet form prior to shape  
forming.

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23. The method as recited in claim 21 wherein the polymer material is configured having a high surface area made up of a plurality of topographical features prior to shape forming.

24. The method as recited in claim 21 wherein the casing member is in the form of a ring having an L-shaped configuration, and the sealing element contact surface extends radially inwardly away from the casing member.

25. The method as recited in claim 21 wherein the sealing device is formed from two polymer laminated metallic constructions, and further comprises the step of joining together the two shaped formed casing members and respective sealing elements.

26. The method as recited in claim 25 wherein the step of joining comprises bonding together the two casing members.

27. The method as recited in claim 25 wherein the step of joining comprises deforming a portion of at least one of the casing members towards an adjacently position portion of the other one of the casing members.

28. The method as recited in claim 25 wherein during the joining step the two polymer laminated metallic constructions are combined so that the two case members are placed into contact with one another.

29. The method as recited in claim 25 wherein during the joining step the two polymer laminated metallic constructions are combined so that the two sealing elements are placed into contact with one another.

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30. The method as recited in claim 25 wherein during the joining step the two polymer laminated metallic constructions are combined so that the two case members are separated from one another by one of the sealing elements.

10 31. The method as recited in claim 21 wherein during the shape forming step the casing member is deformed along a portion adjacent an inside diameter casing member end to impose a desired urging force onto the sealing element.

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